

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of: John W. Evans, et al.	)	Examiner: Gregory R. Del Cotto
	)	
Serial No.: 09/935,982	)	Confirmation No.: 2268
	)	
Filing Date: August 23, 2001	)	Group Art Unit: 1796
	)	
For: Non-Aqueous Heat Transfer Fluid and Use Thereof	)	Docket No.: 97541.00011
	)	

Dated at Hartford, Connecticut, this 28th day of July, 2008

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Alexandria, VA 22313

**APPELLANT'S REPLY BRIEF**

Eric E. Grondahl  
Registration No. 46,741  
McCarter & English, LLP  
CityPlace I  
185 Asylum Street  
Hartford, CT 06103-3495  
Tel: (860) 275-6704  
Fax: (860) 724-3397  
E-mail: egrondahl@mccarter.com  
Attorney for Applicant

**I.     STATUS OF THE CLAIMS**

Claims 30 and 40-45 are pending in the application.

Claims 1-29 and 31-39 were cancelled during prosecution.

Claims 30 and 40-45 stand rejected and are on appeal.

## **II. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

1. Claims 30 and 41-45 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Reny, WO89/09806.

2. Claim 40 stands rejected under 35 U.S.C. § 103(a) as being obvious in view of Reny, WO89/09806.

3. Claims 30 and 40-45 stand rejected under 35 U.S.C. § 103(a) as being obvious in view of in view of Meyer et al., Patent No. 5,118,434.

4. Claims 30 and 40-45 also stand rejected under 35 U.S.C. § 103(a) as being obvious in view of Wood, U.S. Patent No. 4,455,248.

### **III. ARGUMENT**

In the Examiner's Answer, the Examiner indicates that the rejection of claims 30 and 40-45 under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement, and the rejection of claims 30 and 40-45 under 35 U.S.C. § 103(a) as being obvious in view of Maes et al., U.S. Patent No. 5,366,651, have been withdrawn. Accordingly, Appellant addresses only the remaining grounds of rejection discussed in the Examiner's Answer.

#### **A. Rejection of Claims 30 and 41-45 Under 35 U.S.C. § 102(b) Over Reny**

In order to anticipate a claim under 35 U.S.C. § 102(b), a reference must describe each and every limitation recited in a claim. Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631 (Fed. Cir. 1987); MPEP § 2131. Reny does not address reducing the toxicity of a heat transfer fluid at all, much less describe the method recited in the claims on appeal. Moreover, the claimed method is not inherent based upon Reny. Reny does not describe a non-aqueous heat transfer fluid having the composition of the fluid resulting from the recited method. Accordingly, the Examiner's rejection of claims 30 and 41-45 as anticipated by Reny is improper and must be reversed.

In the Answer, the Examiner makes several assertions regarding the teachings of Reny (WO89/09806) which are not supported by the text of the reference. The Examiner has selectively chosen snippets of Reny to cobble together an argument that Reny describes the invention of claims 30 and 41-45. When Reny is properly considered, it is plain that Reny does not describe a non-aqueous heat transfer fluid comprising ethylene glycol, propylene glycol and additives in the proportions recited in the appealed claims.

On page 3 of the Answer, the Examiner conflates two passages in Reny to support the position that Reny anticipates claims 30 and 41-45. As noted by the Examiner, at page 3, lines

1-15, Reny describes a composition containing at least 90 percent by weight of an alkylene glycol or a mixture of two or more alkylene glycols. In this passage, Reny does not describe *any* specific combination of alkylene glycols, much less the specific combinations recited in claims 30 and 41-45.

The Examiner goes on to state that “This embodiment contains no water.” This is an inference drawn by the examiner that is not correct. The passage on page 3, lines 1-15 describes “a composition which *comprises*” alkylene glycols and various additives, including phosphoric acid. Reny does not mention water one way or the other in the passage that is cited by the examiner, but the use of the term “comprises” indicates that the composition may contain more than the listed ingredients. In fact, the listing of phosphoric acid as an ingredient in the composition demonstrates that at least some embodiments of Reny’s composition *necessarily contain water*. As discussed in detail in Appellant’s Brief, added water must be included in any composition that includes phosphoric acid to ionize the phosphoric acid. Indeed, this is confirmed by Reny, as all of the compositions described by Reny containing phosphoric acid also contain at least 1 part added water. See, e.g., Page 9, Example 1 and 2.

The examiner next cites to page 3, line 30 through page 4, line 12, in which Reny describes use of propylene glycol and ethylene glycol in the composition previously described at page 3, lines 1-15. In this section, Reny is merely discussing glycols that may be used in the composition *previously described*. Reny is not describing any complete embodiment of the composition in this passage. While this passage states that the composition may contain the listed alkylene glycols “in any proportion”, the only specific composition described is the preferred embodiment which contains “at least 30 weight percent propylene glycol.” More importantly, in this section, Reny is silent regarding the presence of additives or added water in

the composition, which is understandable because Reny is not describing a complete composition in the passage. In any event, there is nothing in the cited passage which supports even an inference that added water is not required in the compositions containing ethylene glycol, propylene glycol and additives described by Reny.

The Examiner states that on page 9 of Reny a coolant composition is taught that contains “30 parts propylene glycol, 70 parts ethylene glycol, less than 1 part water, 0.25 parts azole, 0.15 parts molybdate, and 0.075 parts phosphoric acid.” All of these figures except for the water content are from Example 2 in Table 1. The correct water figure for Reny’s Example 2 is fully 1 part. The only compositions listed on page 9 that are described as containing “< 1 part water” are C<sub>1</sub>\* and C<sub>2</sub>\*. These compositions contain no additives at all and the asterisk is defined on page 11 as representing that these compositions “[are] not an example of the invention”. C<sub>1</sub>\* and C<sub>2</sub>\* are included by Reny for comparison with examples of his fluids that do contain additives.

In fact, Reny plainly teaches adding water to fluids comprising ethylene glycol, propylene glycol and additives. Reny states at page 5, lines 23-26 that phosphoric acid “is employed to maintain the pH of the coolant composition in the range from 7 to 9, preferably from 7 to 8, and only if necessary. Some alkylene glycol mixtures are within the pH limits, and in such cases no pH adjustment is required.” Reny does not describe any specific alkylene glycol mixture that does not require pH adjustment. In all of the mixtures of ethylene glycol, propylene glycol and additives, including the Example 1 and Example 2 at page 9 of Reny, phosphoric acid and added water are present in the composition. Accordingly, in the only sections where Reny specifically describes fluids containing ethylene glycol, propylene glycol, and additives, Reny describes adding water to the fluid.

The Examiner also cites the portion of the present application which defines “non-aqueous” as a composition that may contain up to 0.5% by weight of water, to suggest that Reny describes a composition that anticipates the claims on appeal. The examiner ignores the caveat in the application that this water is present only *as an impurity* due to the hygroscopic nature of propylene glycol. See Paragraph [0056]. In the compositions described by Reny, *added* water is necessary to ionize the phosphoric acid. In any event, as pointed out in Appellants’ Brief, the compositions described by Reny that contain ethylene glycol, propylene glycol and additives all contain more than 0.5% by weight added water.

Reny does not describe a single embodiment of a composition comprising ethylene glycol, propylene glycol and additives without added water, which is the fluid resulting from the method recited in claims 30 and 41-45. Accordingly, Reny does not anticipate claims 30 and 41-45, either explicitly or inherently, and the Examiners rejection should be reversed.

**B. Rejection of Claim 40 Under 35 U.S.C. § 103(a) Over Reny**

At pages 4-5 of the Answer, the Examiner concedes that Reny does not describe a method for reducing the toxicity of nonaqueous fluids containing ethylene glycol by mixing ethylene glycol with propylene glycol in the proportion recited in claim 40.<sup>1</sup> The Examiner nevertheless argues that the claimed method is obvious because “the teaching of [Reny] suggest reducing the oral toxicity of nonaqueous fluids containing ethylene glycol by mixing with ethylene glycol a specific polyhydric alcohol such as [propylene glycol] in the specific proportions as recited by the instant claims.”

There are at least two errors made by the Examiner in his reading of Reny. First, as discussed above, Reny does not describe, teach or suggest a combination of ethylene glycol and

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<sup>1</sup> The examiner actually refers to the combination of ethylene glycol with glycerol in the Answer. Because the claims on appeal recite only combinations of ethylene glycol and propylene glycol, Appellant presumes that the examiner intended to refer to propylene glycol rather than glycerol in the Answer.

propylene glycol that is non-aqueous, i.e. that does not contain added water. Second, the Examiner's bald statement that Reny suggests reducing the oral toxicity of ethylene glycol containing fluids is wrong. Reny does not even mention oral toxicity, much less describe or suggest the method of claim 40. Indeed, the Examiner does not cite any portion of Reny to support his erroneous statement. Accordingly, the Examiner's rejection of claim 40 as obvious in view of Reny is erroneous and should be reversed.

**C. Rejection of Claims 30 and 40-45 Under 35 U.S.C. § 103(a) Over Meyer**

The Examiner's rejection of claims 30 and 40-45 under 35 U.S.C. § 103(a) in view of Meyer is based upon an incorrect and incomplete reading of Meyer. A prior art reference must be considered in its entirety, including portions that lead away from the claimed invention. MPEP § 2141.03; W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art.

In re Wesslau, 353 F.2d 238, 241 (CCPA 1965). The Federal Circuit has held that it is improper to consider a single line taken out of context from a reference without considering other statements in the reference that argue against obviousness. Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 796 F.2d 443, 448 (Fed. Cir. 1986). When Meyer is properly considered, it does not describe, teach or suggest the invention of claims 30 and 40-45.

At page 5 of the Answer, the Examiner states that the "broad teachings" of Meyer would suggest compositions having reduced toxicity because Meyer suggests compositions containing the same components in the same proportions recited by the claims on appeal. Meyer describes deicing fluids. The deicing fluids described in Meyer can contain any of a number of glycols



listed at col. 2, lines 43-54, “or mixtures thereof”. Meyer nowhere describes any specific mixtures of glycols. All of the examples provided by Meyer contain only ethylene glycol. Thus, while Meyer describes a broad genus of glycols or glycol mixtures that may be included in his deicing fluid, Meyer does not describe, teach or suggest the specific proportions of ethylene glycol and propylene glycol recited in the claims on appeal.

The Examiner also states, without citation to any passage, that Meyer suggests reducing the oral toxicity of fluids containing ethylene glycol by mixing ethylene glycol with propylene glycol. Meyer is completely silent as to the toxicity of any component of the deicing fluid. Meyer contains no discussion of the toxicity of ethylene glycol containing fluids, and certainly Meyer does not suggest reducing the toxicity of the fluid by combination with propylene glycol. Indeed, all of the examples of Meyer describe fluids containing only ethylene glycol, further demonstrating that Meyer was not concerned with toxicity of the fluids.

At page 10 of the Answer, the Examiner states that Meyer’s statement at col. 2, lines 58-59 that the composition may contain “up to 50 percent by weight of water” would clearly suggest a fluid containing no water. The inference drawn by the examiner does not stand up to scrutiny when Meyer is considered in its entirety, as it must be. In the very paragraph cited by the Examiner, Meyer states that “[p]referably, the amount of water is between about 1 percent and 10 percent by weight.” Col. 2, lines 59-61. Meyer further states, “In practice. . . the glycol-based compositions of the present invention are diluted with water.” Meyer’s fluids are “typically employed as a glycol-water mixture diluted to between about 30 and 50 percent glycol by weight.” Col. 4, line 68 to col. 5, line 5. There is nothing in Meyer that states that the fluid can contain no added water. The Examiner’s conclusion that “up to 50 percent” water suggests

that the fluid may contain no water requires that the remainder of Meyer be ignored, which is incorrect as a matter of law.

For at least these reasons, and the reasons previously set forth in Appellant's Brief, the claims on appeal are not obvious under 35 U.S.C. § 103(a) in view of Meyer, and the Examiner's rejection should be reversed.

**D. Rejection of Claims 30 and 40-45 Under 35 U.S.C. § 103(a) Over Wood**

The Examiner's rejection of claims 30 and 40-45 based upon Wood is also based upon an incorrect and incomplete reading of Wood. Moreover, the Examiner has failed to properly consider or address the evidence presented by the Applicant that Wood necessarily contains added water to dissolve the sodium metasilicate that Wood states is a necessary component of the fluid. Wood must be considered in its entirety, from the perspective of one skilled in the art. Velander v. Garner, 348 F.3d 1359 (Fed. Cir. 2003)(the prior art must be viewed from the perspective of a person skilled in the art at the time of the invention). When Wood is properly considered, it does not describe, teach or suggest the invention of claims 30 and 40-45.

Contrary to the Examiner's statement at page 6 of the Answer, Wood does not teach or suggest a combination of ethylene glycol and propylene glycol in the proportions recited in the amended claims. Like Meyer, Wood merely provides a list of glycols that may be included in the fluid. Wood does not describe teach or suggest a fluid containing ethylene glycol and propylene glycol in the proportions recited in the claims on appeal.

In addition, and again contrary to the Examiner's statement on pages 6-7, Wood does not suggest reducing the toxicity of an ethylene glycol containing fluid by mixing the ethylene glycol with propylene glycol. As with Reny and Meyer, there is no discussion of toxicity of ethylene

glycol in Wood at all, much less any discussion of reducing the toxicity by combination with propylene glycol.

The Examiner's position that Wood teaches a non-aqueous fluid is wrong, and ignores the evidence submitted by the Appellant establishing as a matter of scientific fact that the fluid of Wood must contain added water. The Examiner has not disputed (1) that Wood states that sodium metasilicate is a necessary component of the fluid, (2) that sodium metasilicate is insoluble in ethylene glycol and propylene glycol, (3) that added water is required to maintain sodium metasilicate in solution, and (4) that failure to maintain the sodium metasilicate in solution can lead to severe problems in use. Nevertheless, the Examiner insists that certain statements of Wood can be interpreted as allowing no water to be added to the fluid. The only way that the Examiner can reach this conclusion is to disregard the evidence submitted by the Appellant demonstrating the facts listed above. The Examiner is required to consider and address the evidence submitted by the Appellant. In re Sullivan, 498 F.3d 1345, 1351 (Fed. Cir. 2007)(evidence rebutting prima facie case of obviousness must be considered by examiner).

Wood must be viewed from the perspective of one skilled in the art, and the evidence presented by the Applicant to rebut obviousness must be properly considered by the Examiner. It is plain that when properly considered, particularly in view of the undisputed evidence provided by the Applicant, that the fluids described in Wood necessarily contains added water to maintain the sodium metasilicate in solution. Indeed, to the extent that Wood can be read as suggested by the Examiner to exclude water, Wood would be non-enabling, as the evidence submitted by the Appellant proves beyond dispute that, in order to function in a heat transfer application, the fluid of Wood requires water to maintain the sodium metasilicate in solution.

The Examiner points to the statement in Wood at col. 3, lines 8-13 that fluid concentrates can contain between 0.1 and 10 parts by weight of water per 100 parts of glycol, and states that this is within the water content allowed in the definition of “non-aqueous” in the specification. As noted above, the definition of “non-aqueous” describes the presence of water as an impurity due to the hygroscopic nature of propylene glycol. See Paragraph [0056]. The definition does not include water added to the fluid to dissolve additives. As recited in the claims on appeal, the Appellant’s heat transfer fluid contains no additive that requires water for dissolution of the additive or to enable the additive to function. Even if a tiny amount of sodium metasilicate could dissolve in 0.1 percent water, it would still be excluded from the claimed formulation because sodium metasilicate *requires* water to dissolve and to function. If it is construed that Wood could have a formulation that falls within the Appellant’s definition of non-aqueous (i.e. less than 0.5% water), it still would not be within Appellant’s non-aqueous heat transfer fluid as recited in claims 30 and 40-45. Wood does not recognize the problems of highly concentrated formulations that contain silicates. As set forth in detail in Appellant’s Appeal Brief, including the Declaration of John W. Evans (Exhibit 1), paragraphs 6 and 7, and the statement by the Penray Companies, Inc. (Exhibit 2), concentrated formulations that include silicates have problems where the silicates drop out and become a “sludge” that plugs up heat exchanger passageways. By avoiding additives such as sodium metasilicate, the invention avoids problems with regard to additives that require water for dissolution.

Finally, it would not be obvious to modify Wood by removing the sodium metasilicate and water from the composition. Wood states that sodium metasilicate is *necessary* in the composition. Col. 3, lines 27-35. Wood therefore teaches away from a fluid having no additives requiring water for dissolution as recited in claims 30 and 40-45.

Accordingly, the Examiner's rejection of claims 30 and 40-45 under 35 U.S.C. § 103(a) based upon Wood is improper and should be reversed.

**E. Double Patenting Rejection**

In the Examiner's Answer, the examiner notes that United States Application No. 09/910,497, which formed the basis for the examiner's non-statutory obviousness type double patenting rejection, has been abandoned. Applicant notes that a continuation application, Serial No. 11/983,841 is currently pending. Pursuant to MPEP § 804, if this is the sole remaining rejection prior to issuance of any of the copending applications as patents, this rejection should be withdrawn in this case. While Applicants do not admit that the claims of the present invention are obvious in view of any one of those copending applications, in the event that one or more of the copending applications issues as a patent prior to this application, Applicants will file a terminal disclaimer to obviate the double patenting rejection.

**CONCLUSION**

For the reasons set forth above, and the reasons previously set forth in Appellant's Brief, reversal of the rejection of Claims 30 and 40-45 is warranted, and such action is earnestly solicited.

No fee in addition to that submitted herewith is believed to be required. However, if any additional fee is required, or otherwise if necessary to cover any deficiency in fees already paid, authorization is hereby given to charge any required fees to Deposit Account No. 50-3569; further, if any extension of time is required, please consider this a petition therefor, and authorization is hereby given to charge the associated extension fee to Deposit Account No. 50-3569.

Respectfully submitted

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/Eric E. Grondahl/

Eric E. Grondahl

Registration No. 46,741

Attorney for Applicant

PTO Correspondence Address:

McCarter & English, LLP

CityPlace I

185 Asylum Street

Hartford, CT 06103-3495

Phone: (860) 275-6704

Fax: (860) 724-3397

E-mail: [egrondahl@mccarter.com](mailto:egrondahl@mccarter.com)